## REMARKS

Applicants traverse the second, non-final rejections and request favorable reconsideration and allowance of provisionally elected claims 1-34 and 45-47 in view of the following remarks.

### Claim Status

Claims 1-47 are pending. Claims 1, 17, and 45 are independent. Claims 35-44 remain withdrawn from consideration. No new matter has been added.

### Rejected Claims

Applicants request favorable reconsideration and withdrawal of the rejections set forth in the Office Action. Applicant notes that a new Primary Examiner has been assigned to this application.

Claims 1-16, 45 and 46 were rejected under 35 U.S.C. §103(a) as being unpatentable over the newly-cited U.S. Patent No. 5,505,502 Smith et al. ("Smith et al '502") in view of applicant's own citation of a 2282 Thiokol High Performance Polysulfide Joint Sealant document. ("Thiokol 2282"). Claims 17-34 and 47 likewise were rejected under 35 U.S.C. §103(a) as being unpatentable over Smith et al '502 in view of the newly-cited U.S. Patent No. 3,822,902 to Maurer et al. ("Maurer et al '902"). Applicants submit that the present inventions, as recited in independent claims 1, 17, and 45, are not obvious over the aforementioned art combinations. Therefore, these rejections are being respectfully traversed.

Applicants submit that none of the cited documents relate to problems that users of SET technology had to deal with, before the present invention. As understood, the Examiner has alleged Smith et al '502 to be a true teaching reference, as of 1993, that mating male and female threads could be "radially expandable". However, the present invention relates to a modern SET technique that came along after 1993.

Smith et al '502 illustrate thin-walled extensions or lips 31, and 35 [col 4, lines 8-30] and an o-ring 38 that can be wedged and compressed up to 25%. However, these actions are taught to be the result of a make-up torque that creates a camming seal and not a radial expansion arising from a separate inner SET tool. Note also inner fluid pressure is said to be able to flex the lip 31, outward. [col 5 lines 13-26].

Applicants specifically disclosed in the present application, at paragraph 55, that the chemistry illustrated by the Thiokol 2282 brand was one example of a preferred greaseless sealant, for use in combination with and according to principles of the present invention. However, nothing within the four corners of the specification of Thiokol 2282 suggests that it would have utility according to the particularly claimed SET geometry that is defined by the claims. Only a complete hindsight reconstruction using applicant's specification as the true teaching reference is available to make that leap.

Maurer et al '902 is a 1972 patent that has nothing to do with SET technology and therefore categorically is irrelevant and cannot be relied upon as a secondary reference that would teach one of ordinary skill about some "obvious" modification to the 1993, alleged teaching reference of Smith et al '502, in order to produce the particular and novel SET improvements being claimed.

Applicants, in their September 6, 2005 Request For Reconsideration, at page 4, pointed out in detail that Royal Dutch Shell may have begun to work on concepts underlying Solid Expandable Tubular (SET) Technology as early as 1993, however, the first connection suitable for a true SET application was not developed until about 1999.

Workers or ordinary skill as of November, 2003, when the present application was filed, well-recognized that modern SET technology consisted of radially deforming a solid string formed by pipes and connections wherein to expand the external diameter either one pushed a mandrel along the pipe or used a rotary mandrel. The objective of SET technology is to provide solutions for particular drilling/completion problems such as isolated zones with lost circulation, low pore pressure, for cladding of damaged pipes, etc. In all these cases it is important to provide a homogeneous distribution of external

diameters to provide a good contact with either the well bore or the pipe to be clad. Also, from a production perspective the homogeneity of internal diameters is also important to avoid pressure losses.

The expansion process produces a cold-work of a steel pipe resulting in a pipe with a larger diameter. However, a secondary effect of this cold deformation is a reaction to such deformation which creates a shrinking or "spring-back" effect towards the inside diameter of the pipe. This effect exists all along the pipe but it is particularly severe on the free ends of the pipe as there is nothing there to restrain such a movement.

When the same pipe expansion process is produced inside a connection threaded on a pipe end there are several things to be considered.

First, from a structural perspective, it is necessary to perform this expansion as smooth as possible aiming to avoid the rupture of the string at any of the weakest points, such as the connection or the interface of a pipe and a connection. Recall that it is also important to use strings with constant or almost constant stiffness all along the length of the string. Therefore, it is necessary to provide a nearly constant profile of the string with no sudden changes in wall thicknesses, since it is well-known that changing thicknesses causes localized stresses. These localized stresses could lead to a failure in the transition area when subjected to high tensile loads like those observed during the expansion process.

Secondly, from a sealability point of view, it is mandatory that the connection maintain sealing integrity even after being radially expanded. The shrinking reaction tends to force both the male and the female members of the connection to be separated from each other. Hence, it is necessary to provide a way of maintaining both members together while being expanded and then to remain together after the expansion.

Smith et al '502 merely describes a connector (box and pin) joined to pipes, for instance by welding them, where the walls of such connector are thicker than the pipes that such pins and boxes are connected to. Smith et al '502 illustrates connectors which have two metal seals as well as an elastomeric seal with two thread load relief grooves,

formed by two mating threaded surfaces, one with a male (pin) thread and the other with a female (box) thread. The metal seals are located on long, unthreaded lips while the elastomeric seal is located in a groove close to the external shoulder of the male member.

**Independent Claims**

A basic comparative analysis between the teachings of Smith et al '502 and the presently claimed inventions of independent claims 1, 17 and 45 demonstrates many differences which one of ordinary skill would easily recognize as making the two types of connections not at all comparable. Smith et al '502 do not disclose any incomplete threads adjacent a free end, but instead an elongated extension or lip, 31, 35. Applicants have taught criticality for an overall constant diameter joint and pipe and a first incomplete thread being located at least adjacent the first free end of a male threaded element. The present application further discloses incomplete threads with a very particular geometry or shape, i.e. trimmed roots but complete crests which are critical to provide a longer contact along the threaded area and which increases the tensile resistance of the connection in comparison with the prior art.

Independent apparatus Claims 1 and 17 require limitations as to thread structure not at all found in Smith et al '502, such as:

a radially expandable male threaded element having external male threading and a first free end, the external male threading including a first incomplete thread and a first hooked thread, the first incomplete thread being located at least adjacent the first free end of said male threaded element.

Likewise, Independent method Claim 17 requires:

providing a first radially expandable tubular member having external male threading and a first free end, the external male threading including a first incomplete thread and a first hooked thread, the first incomplete thread being located at least adjacent the first free end of the first tubular member;

providing a second radially expandable tubular member having internal female threading and a second free end, the internal female threading including a second incomplete thread and a second hooked thread, the second incomplete thread being located at least adjacent the second free end of the second tubular member;

Likewise, Independent apparatus claim 45 requires:

a pair of radially expandable elements each having threading at a free end thereof and coupled to one another, the threading including hooked incomplete threads being located at least adjacent the free ends; and;

With respect to the "obviousness" of choosing any particular "sealant", as recited in Claim 45 and 46, it must be emphasized that the alleged teaching reference, Smith et al '502, does not disclose any type of thread sealant at all, just three mechanical seals, including sliding metal-metal contacts and a compressed O-ring. The larger diameter and very long tong surfaces 50, 51 are noted to be spaced from a "corrosion protection coating" on the pipe surfaces 22, 23 but no manner of thread sealant is mentioned. Perhaps, a lubricant would be used during the assemblage, but the two metal seals and the O-ring are taught to be required to provide the sealing mechanism. Additionally, a standard viscous, API thread dope would not be suitable for SET type expandable connections as it cannot stand the forces which result from the expansion process.

Smith et al. '502 represents an approach taken by Royal Dutch Shell, in 1993. Later disclosures by Shell that are more specific to modern SET techniques include US Pat. No. 6,604,763 B1, which likewise illustrates that Shell has taught away from any manner of a greaseless polymer or flowable sealant, in favor of solid rubber O-rings that deform elastically upon an expansion.

The Polyspec, Thiokol 2282 material was discovered to have acceptable characteristics for the particular SET threads of the invention, such as a minimum shear stress, only after testing done by applicants. Applicants submit that the geometry and mechanical characteristics required by claims 45, 46 are not merely data recited in the brochure being relied upon by the Examiner, and the difficulties of a SET sealing environment are also not addressed in that document.

Another aspect that makes the connection disclosed by Smith et al. '502 not comparable to the one described herein is the fact that the former is a connection threaded on heavy wall pipes which presents a difficulty for expansion due to the inhomogeneous

distribution of wall thicknesses. Such pipe and connection geometry not only may lead to a fracture in the transition zone between the connector and the pipe, but also does not provide an appropriate solution for the drilling/completion problems that are identified herein.

The connection described and claimed herein does not employ sliding metal-metal seals or an elastomeric O-ring seal as in the 1993 teachings of Smith et al. '502. Only applicants teach an SET type of sealing mechanism provided by an elastomeric sealant or cold welded soft metals which are suitable for expansion by a mandrel after being assembled.

Likewise, the metal coatings illustrated within the 1972, alleged "secondary teachings" of Maurer et al '902 are irrelevant because they do not address requirements of a SET joint. Maurer et al '902 disclose a heavy upset connection with a seal ring and a groove to avoid high pressure inside the connection and make reference to the use of thread lubricant (zinc base or lead base) to prevent galling (col.4, lines 10-17).

To the contrary, applicants do not disclose use of any separate thread lubricant in between the coated surfaces as such could prevent the same from being cold-welded. Applicants have plainly taught that both members must be threaded and engaged to form a cold welding upon expansion, to create a strong connection. The cold welding process between metallic coatings taught only by the present invention is needed for joining SET expandable pipes, and a viscous lubricant would destroy that weld.

In summary, despite the allegations of the Examiner, Smith et al '502 is not a true teaching reference for the invention of even Independent Claim 1, for a particular radially expandable threaded tubular assembly. The assembly comprises a radially expandable male threaded element having external male threading and a first free end. The external male threading includes a first incomplete thread and a first hooked thread. The first incomplete thread is located at least adjacent the first free end of the male threaded element. The assembly also comprises a radially expandable female threaded element having internal female threading and a second free end. The internal female threading

includes a second incomplete thread and a second hooked thread. The second incomplete thread is located at least adjacent the second free end of the female threaded element. The female threaded element is threadedly engaged with the male threaded element. The assembly also comprises an elastomeric sealant extending between the external male threading and the internal female threading. The sealant adheres to both the external male threading and the internal female threading, and is capable of being elongated after curing while remaining extended between and adhered to the external male threading and the internal female threading.

Likewise, despite the allegations of the Examiner, Smith et al '502 is not a true teaching reference for the invention of Independent Claim 17, which comprises a radially expandable male threaded element having external male threading and a first free end. The external male threading includes a first incomplete thread and a first hooked thread. The first incomplete thread is located at least adjacent the first free end of the male threaded element. The assembly also comprises a radially expandable female threaded element having internal female threading and a second free end. The internal female threading includes a second incomplete thread and a second hooked thread. The second incomplete thread is located at least adjacent the second free end of the female threaded element. The assembly also comprises a first metallic coating disposed on and adhered to the external male threading, and a second metallic coating disposed on and adhered to the internal female threading. The female threaded element is threadedly engaged with the male threaded element, and the first metallic coating is cold welded to the second metallic coating.

Likewise, despite the allegations of the Examiner, Smith et al '502 is not a true teaching reference for the invention of Independent Claim 45, which comprises an expandable sealed tubular joint with a pair of radially expandable elements each having threading at a free end thereof and coupled to one another. The threading includes hooked incomplete threads located at least adjacent the free ends. The joint also comprises a sealing substance extending between and adhering to the threading of one

radially expandable element and the threading of the other radially expandable element. After a radial expansion of the coupled pair of radially expandable elements, the sealing substance remains extended between and adhered to the threading of one radially expandable element and the threading of the other radially expandable element.

**Dependent Claims**

Dependent claims 2-16, 18-34, and 46-47 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. For example, neither Smith et al '502 nor Maurer et al '902 discloses a flush joint connection, as recited, for example, in dependent claims 11, 29, and 47.

The dependent claims 2-10, 18-34, and 46-47 are not obvious or the product of some routine optimizations. Applicants respectfully disagree with the unsupported contentions that Smith et al '502 or the Thiokol document or Maurer '902 can be read to teach the various and particular limitations as found in the dependent claims. As discussed above, neither Smith et al '502 nor Maurer et al '902 teach the SET environments defined in all of the dependent claims. This issue should moot in view of the discussion above regarding independent claims 1, 17, and 45.

Further individual consideration of these dependent claims is requested.

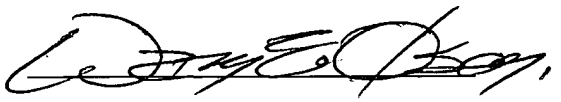
**Conclusion**

Applicants respectfully submit that provisionally elected claims 1-34 and 45-47 of the instant application are in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowance are requested.

The undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. Any petition fee required to render a response timely may be charged to our Deposit Act. No. 06-1205.

All correspondence should continue to be directed to our address given below.

Respectfully submitted



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